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FIRST RECORD OF THE OCCURRENCE OF *Eriococcus leptospermi* Mask. IN NEW ZEALAND.

J. M. HOY, Entomological Research Station, Ashburton.

During the investigation of the coccid complex associated with the death of manuka (**Leptospermum scoparium** Forst.) two species of the genus **Eriococcus** have been identified. One species is identical with **Eriococcus leptospermi** Mask. an insect described from **Leptospermum laevigatum** in Australia. In New Zealand this insect has been identified from **Leptospermum scoparium** in the vicinity of the Conway River in North Canterbury on five occasions, the locality records being; Conway Bridge, Hundalee, Ferniehurst, Ethelton and Hanmer. The effect of **E. leptospermi** on the host plant is not fully known as the writer has not had the opportunity of visiting the locality. The other species of **Eriococcus** is directly implicated in the death of manuka over large areas. This will be described as a new species in another publication.

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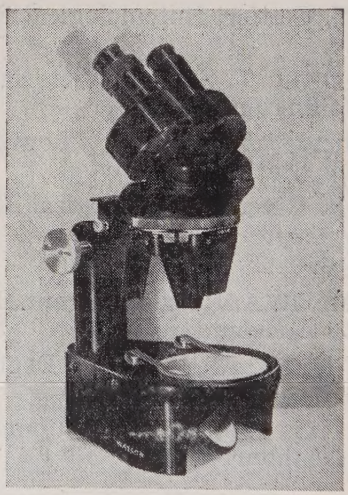

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THE STREPSIPTERA, AN INSECT ORDER NEW TO NEW ZEALAND.

E. S. GOURLAY, Cawthron Institute, Nelson.

The Strepsiptera is an endoparasitic insect Order with perhaps the most complex array of characters of diverse form to be found in any group. It has been placed by various authors in the Diptera, Neuroptera, Hymenoptera and Coleoptera, while Westwood considered it to be intermediate between Hymenoptera and Lepidoptera. Thus, although forewings occur in the adult male, as in both sexes in the Coleoptera, their present diminutive form is useless as protection for the hind wings and have none of the characteristic shape or likeness in either structure or position to those of beetles. At the present time the Order is separated from all others on morphological and phylogenetic characters; neither the free Triungulinid larvae nor the adult males take food, while the metamorphosis is unique. From much controversy and many differing opinions the Strepsiptera has finally emerged on the findings of Pierce (1) and more recent authors to the status of a separate insect Order.

The greatest number of species of Strepsiptera occur north of the Equator, mostly in temperate regions, where over 120 species are recorded. Distribution is general, in that practically every large land mass has some representatives present; south of the Equator less than fifteen species are known, from Brazil, Java, Australia (Queensland, New South Wales and South Australia) and Fiji. Undoubtedly this small southern representation is due to lack of entomological investigation in this direction, mainly owing to the minute size of the Streptsiptera and to the fact that to all but the most painstaking collectors the host insects parasitised (Stylopised) by Strepsiptera are seldom examined for such an association. Those who have actually made field collections of males without recourse to rearing them from hosts, are an infinitely small number of workers in the entomological field. In 1948 (2) McSwain used female **Stylops pacifica** Bohart to attract males, very successfully on fine days, and obtained a large number; his methods could be applied easily under New Zealand conditions, for Stylopised hosts can be collected by sweeping with a net, confining suitably in numbers, when some would prove to be attractive to male **Elenchus.**

Males, after emergence, live only a short time, amounting to not more than three days and seldom live more than one; they fly with the greatest rapidity and with a darting movement, quite inconsistent with the large and weak wing expanse and it is said that in some species the vibration of the short forewings produces a relatively loud humming sound. Females remain within the host, only the head showing on the surface and the larvae (Triungulinids) escape from the parent through the brood canal, situated between the skins of the pupa and the adult female insect. Triungulinids are hexapods, superficially similar to many other insect larval forms and will await their opportunity to enter a host by running over plants frequented by these insects; no sooner is a host found than the Triungulinid will enter it and then loses its insect like larval

form to degenerate into a maggot-like creature in the case of a female Strepsipteron and a highly specialised insect in the male. The female head and the male puparium both project from the body of the host and are somewhat similar in appearance, but latterly, with the development of the male taking place its eyes and general form may be discerned through the semi-transparent puparium.

Hosts of the Strepsiptera are bees, fossorial Hymenoptera, Hemiptera, and one record occurs in each instance of an ant, a mole cricket, a doubtful record on a fly, and a grasshopper. Of these, the first is the predominant host group; in the southern hemisphere recorded hosts are all leafhoppers.

The species described in this paper was collected on Stephen's Island in Cook Strait in January 1933, and occurred on southern slopes of the western end of the Island at altitudes of from 300 to 600 feet, where it was associated with its leafhopper host, a Jassid of the subfamily Cicadellinae; the latter fed on the predominant plant covering of tussock which offered ideal conditions in which to observe the actions of host and male Strepsiptera. Two days were spent collecting material and although the air was quite still and the days were sunny and hot, the minute size of the male Strepsiptera, their rapid flight and sparse occurrence made collection a very difficult matter. For each individual taken in the net three would escape, some by their rapid and erratic flight and others by crawling through the net material before their presence could be detected; thus out of eight attempts at capture only two were successful. Hosts on the other hand were very plentiful and were easily caught; they showed parasitism by both Strepsiptera and Dryinidae (Hymenoptera), for larvae of the latter were found adhering externally on the leafhoppers, even in instances where Strepsiptera were already present. Although a thorough search for Dryinids was made none was found. Parasitised leafhoppers seemed to suffer little inconvenience through the presence of either parasite and although several parasitic larvae might be present, taking up as much as one half the total body volume and creating, in the case of the Strepsiptera, huge cavernous holes in the abdomen when adult males emerged from the pupae, their activities did not appear to be unduly hampered and judging by the number present in this state there seemed to be little of the heavy mortality present, such as is observed in parallel conditions and similar host associations abroad.

In February 1929, which ended a hot dry summer, the writer visited Beeby's Knob, a long, low, flattened ridge, averaging 4000 feet in height, adjacent to the northern end of Lake Rotoiti in the Nelson Province, where, living only on a low native grass (**Danthonia**) a similar species of leafhopper to that on Stephen's Island was studied closely. The same combination of parasites and hosts was present and one male Strepsipteron was captured (later accidentally destroyed), also adult Dryinids which are being described in a later paper. The host leafhoppers were sent for identification

in that year to the late J. G. Myers, then stationed at the Imperial College of Tropical Africulture, St. Augustine, Trinidad, who, in the absence of facilities for their study forwarded them to W. E. China of the British Museum, but nothing was done towards determining the identity of these insects and they are now lost. Myers, in 1923, recorded the presence of parasitism in New Zealand by Strepsiptera in leafhoppers (3) as follows: "These nymphs, by the way, are parasitised by a species of **Stylops,** which I have not yet succeeded in rearing to maturity." As the nymphs referred to were found on a variety of scrubby bushes they are certainly not either the Stephen's Island or the Beeby's Knob species and it appears probable that more than one species of Strepsiptera may be found in New Zealand. Myers also refers shortly to having seen larvae of Dryinids on leafhoppers (4) "The Typhlocybinae are among those leafhoppers parasitised by minute wasps of the family Dryinidae. None, however, have yet been successfully reared from New Zealand species, nor have I found affected leafhoppers very numerous." The writer has not found Dryinids associated with the Typhlocybinae in this country so it is possible that the record by Myers may add, on further investigation, another Dryinid to the fauna; to develop from such small hosts as are found in the Typhlocybinae the parasitic wasps would need to be proportionate in size, whereas the Beeby's Knob Dryinid is a relatively large species. Excluding mites, which are present, and the possible occurrence of intestinal worms, these two groups of parasitic insects are, at present, the only parasitic forms of life known to be associated with native leafhoppers. Miller (5) referred to the present species of **Elenchus** in 1937, "Recently E. S. Gourlay has found the first recorded species of Strepsiptera, - - - - ." In 1941 (6) Bohart listed **Dinelenchus, Mecynocera, Liburnenchus, Elenchinus** and **Pseudelenchus** as synonyms of **Elenchus.** There are only six described species of **Elenchus,** representing a wide range of distribution: **E. tenuicornis** Kirby from England, Finland, U.S.A., Australia and Fiji; **E. heidemanni** Pierce and **E. koebeli** Pierce from U.S.A., **E. melanias** Perkins from Hawaii, **E. perkinsi** Pierce from Guam and **E. australensis** Perkins from Australia. Important papers by Hofeneder (7) lists the Strepsiptera of the world, give host associations, geographical distribution and a valuable bibliography.

The Strepsipteron under consideration has two tarsal joints, without claws, and so falls into the superfamily Elenchoidea and although minor differences are apparent, it agrees readily enough with the characters given for the genus **Elenchus.**

Elenchus maorianus n.sp.

♂. Length 1.1mm.; length of forewing, .25mm., of hindwing 1.1mm.

In slide mounted specimen, colour of body verona brown, legs and abdomen warm sepia.*

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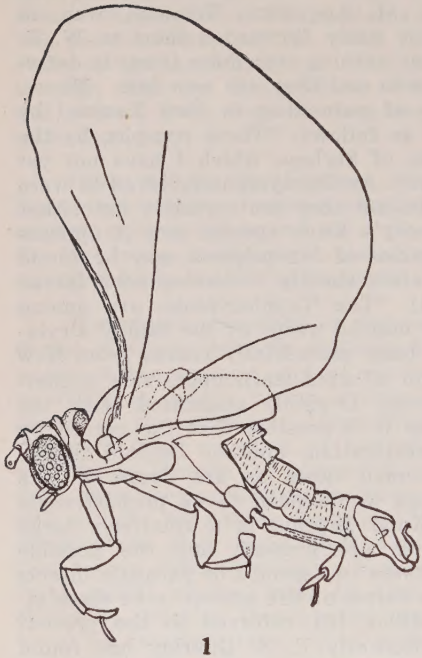
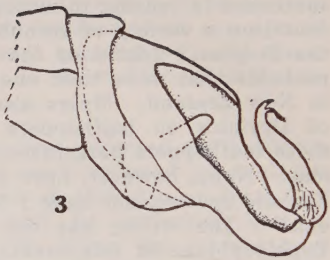
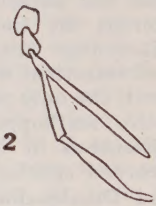
* Colours according to Ridgway.







1. **Elenchus maorianus,** type ♂.
   (Drawing from slide mount in which distortion of tarsal segments and displacement of prothorax occurs).
2. Antenna of male.
3. Terminal abdominal segments.

First antennal segment sub-triangular, minutely hairy; second pyriform, minutely hairy; third flabellate laterally from close to the base, with the flabellate part one and a half times as long as the segment itself, both clothed with long hairs and many oval to circular sensory pits; fourth segment equal in length to the flabellum of the third and clothed similarly.

Eyes and ommatidia large, black; of normal form, as are the short, ensiform mandibles. Palpi two segmented, the first short and approximately the width of the second at its widest part, second three times as long as first, tapering gradually to an acute point, moderately hairy and finely aristate at the tip.

Thorax moderately covered with minute, short hairs, those on the matasternum stouter, longer and more regularly disposed. Prothorax narrow, dorsally with a transverse, broad, deep groove; anteriorly in close contact with the head, but posteriorly giving the

appearance of a hood, into which fits the mesothorax. This union is not a close one and allows considerable movement of the head and prothorax. Mesothorax rounded anteriorly, posteriorly rising slightly to meet the dorsally elevated parascutellum. Postscutellum of large size, evenly and regularly rounded, steeply rounded posteriorly, but finally quite vertical and overhanging the first abdominal segment. Second tarsal joints arising from a dorsal depression in the first, close to the centre.

Forewings edged with fine setae, the surface regularly and closely covered with microscopic polygonal granular areas; hindwings with venation indistinct and indicated as in fig. 1, the vestiture much as in the forewings, but the areas are not as regularly nor intensely formed and are asperate.

Abdominal segments closely and evenly covered with stouter, moderately long hairs; the terminal segment with even longer and stouter hairs, closely and regularly arranged. Adaegus similarly clothed at the base, and ventrally for two thirds of its length from the base.

Holotype (♂), Stephens Island, 800′, January, 1933.

Paratype (♂), the same. Holotype in collection of Cawthron Institute, paratype in collection E. S. Gourlay.

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NOTES ON *Acantholybas brunneus* Breddin (Heteroptera: Coreidae)

T. E. WOODWARD, Auckland University College.*

The occurrence of this Australian coreid in Auckland was recorded and a descriptive account of the adult and nymphs was given by the writer in 1951 (Trans. R. Soc. N.Z., 79 (2) : 206-209). In view of the scantiness of the information available on the life history and biology of this bug, the following additional records and observations are presented.

6-x-40, 2 males, 2 nymphs, under stones in garden, Sandringham, Auckland (T.E.W.).
6-x-48, 1 male, from wet sack on compost heap, Greenlane, Auckland (K. P. Lamb).
20-x-49, 1 female, 1 male, 1 nymph, on tree Dahlia, Greenlane, Auckland (K. P. Lamb).
16-vii-50, 1 female, 2 males, 1 nymph, on ground under moist, half-rotten wood, Sandringham, Auckland (T.E.W.).
15-x-50, 1 female, 1 male, under volcanic stones in shaded locality in garden, Sandringham, Auckland (T.E.W.).
23-x-50, 1 female, on Chinese cabbage, Sandringham, Auckland (T.E.W.).
16-xi-50, 1 female, 1 male, Sandringham, Auckland (T.E.W.).
18-xi-50, 1 male, Sandringham, Auckland (T.E.W.).
30-xi-50, 1 female, in garden, Queen Street, Auckland, C.I. (E. D. Willis).
1-51, 1 nymph, Sandringham, Auckland (T.E.W.).
27-xi-51, 1 female, Sandringham, Auckland (T.E.W.).

From these records together with those previously listed, it is seen that most of the adults have been collected during the spring and summer months (October to February, inclusive). There is only one record outside these months (16-vii-50), but this is of interest in showing that adults of both sexes and at least the older nymphs can overwinter under Auckland conditions. The nymph captured at this date was probably of the third instar, i.e., about half-grown. Nymphs have been recorded in the following

* Now University of Queensland, Australia.

months: Jan. (third instar), March (late instar), July (third instar), Oct. (late instar), Dec. (second and fifth instars).

A female captured on 15-x-50 had been fertilized, the spermatheca being distended and full of sperm. Dissection indicated that no eggs had recently been laid, but two pale green eggs (one in each ovary) were apparently full-sized though with the corium still soft. A second egg in each ovary was white and about 2/3 as long as the green eggs. There are six ovarioles to each ovary in this species; the remaining eight ovarioles each contained only two small egg rudiments behind the germarium. From the state of ovarian development, it seems that this female must have been almost ready to oviposit and that only a few eggs are laid at a time, the oviposition period probably being rather lengthy. Oviposition in this species must therefore take place at least during late spring and early summer. Judging from the condition of the spermatheca of this female, copulation had taken place fairly recently, and this is in agreement with the observed overwintering of adult males. From the records the main period of nymphal development would seem to be during summer and early autumn; this accords also with the presumed lengthy period of oviposition. Eggs laid comparatively early would mature in time to overwinter as adults; those laid later would subsequently overwinter as late-instar nymphs. This would account for the records of late-instar nymphs in early spring. On this basis there is no need to postulate more than one generation a year, though it does mean that a succession of nymphs and adults must be emerging over a fairly prolonged period.

These rather scanty data are presented in the hope that they might provide a basis and an initial guide for a complete life-history study.

Little seems to be known of the feeding habits of **A. brunneus.** The only observation of feeding known to the author is that of Mr. K. P. Lamb. His specimens taken on 20-x-49 were feeding on the stems of tree Dahlias. Specimens have been taken by the author from Chinese cabbage and lettuce, but they were not seen to feed. Mr. Lamb reports that he has specimens taken from rhubarb.

The author has no New Zealand records of this bug from outside the Auckland district.

NOTES ON DIPTERA.

ROY A. HARRISON, Plant Diseases Division, Auckland.

1. NEW DIPTERA.

The following two species of flies occur in New Zealand. They have not previously been recorded from this region but have undoubtedly been present for several years. The first is probably

an introduced species, but the second species could be indigenous.

A. **Euryomma peregrinum** (Meigen). (Fam. Muscidae).
Meigen J. G., **Syct. Beschr.** 5, 187, 181, 1826.

Collection records are: Bred ex skins and hides, Hastings, April 1947 (Coll. Mr. Collin). Bred ex **Macrocystis** compost, Owairaka, Auckland, Aug. 1948 (Coll. C. Little).

These specimens were identified by Dr. F. Van Emden.

The fly is 3-4mm. long; greyish-black head and thorax; yellowish-brown abdomen with some small dark brown markings on the tergites; legs yellowish-brown; wings clear.

The pupa is armoured with two rows of short processes on each side, the ventral row of each pair stronger; stronger processes posteriorly.

This species is regarded as cosmopolitan in distribution and is probably found throughout New Zealand.

B. **Leptocera (Thoracochaeta) brachystoma** Stenhammer.
(Fam. Borboridae).

Stenhammer, C., **Kongl. Vet. Akad. Handl. 1853:** 393.

Richards, O. W., **Proc. Zool. Soc. Lond., 1930:** 274-77, 290.

Collection records are: Bred ex collected seaweed, Owairaka, Auckland, June 1948 (Coll. C. Little).

These specimens were identified by Dr. O. W. Richards.

This species is one of the smallest Borborids occurring in New Zealand and measures about 1.5mm. in length. It is predominantly black with legs brown and wings somewhat cloudy.

It has been recorded from Europe to Alexandra and Aden; Seychelles; North and South America.

2. NEW LOCALITY RECORDS.

Lonchoptera dubia Curran (Fam. Lonchopteridae).

Since the publication of the record of the occurrence of this fly in New Zealand (**Trans. Roy. Soc. N.Z. 78:** 449-50) it has been found to occur in both islands and appears to be generally widespread.

New collection records are: Tongariro National Park, 4000ft. Nov. 1949 (Coll. K. P. Lamb). Nihotapu, Waitakere Ranges, Jan. 1950 (Coll. R.A.H.). ex Potato foliage, Lincoln College, Canterbury, 1950 (Coll. Anon.). Swept off carrot foliage, Pukekohe, Nov. 1952 (Coll. R.A.H.).

3. DIPTERA INTERCEPTED AT PORTS.

Two species are recorded here. They have not established themselves in New Zealand as far as is known.

A. **Hylemyia urbana** Malloch (Fam. Muscidae).

A female was taken alive from an aircraft from Sydney at Auckland, April 1952.

B. **Macrorchis meditata** Fallen (Fam. Muscidae).

A specimen was bred from soil about bulbs imported from Holland, Wellington, Jan. 1950.

A COMMON MOTH IN AUCKLAND.

K. J. WISE, Plant Diseases Division, Auckland.

In the city and environs of Auckland the small brassy-brown moth **Opogona omoscopa** Meyr. (Fam. Lyonetiadae) is to be seen so often, and in so many places, that it appears to be one of the commonest moths in this area. A collection of moths attracted to light confirms observations.

For the period 14th May to 13th June, 1952, at the Plant Diseases Division, Mount Albert, Auckland, a 200 watt blended bulb (incandescent + mercury vapour) was used in a basement room in which the window and light were at ground-level.

Two collections were made of the moths attracted and killed by the bulb which was in use continuously night and day. Species were represented as follows:

1. COLLECTION MADE ON 19/5/52.

Opogona omoscopa (Meyr.) (Fam. Lyonetiadae)	559	specimens
Gnorimoschema operculella (Zell.) (Fam. Gelechiadae)	2	,,
Gnorimoschema plaesiosoma (Turn.) (Fam. Gelechiadae)	3	,,
Endrosis sarcitrella (L.) (Fam. Oecophoridae)	1	,,
Monopis ethelella (Newm.) (Fam. Tineidae)	2	,,
Tortrix postvittana Walk. (Fam. Tortricidae)	3	,,
Crambus vitellus Dbld. (Fam. Crambidae)	1	,,
Crambus flexuocellus Dbld. (Fam. Crambidae)	30	,,
Scoparia sp. (Fam. Pyraustidae)	16	,,
Selidosema suavis (Butl.) (Fam. Geometridae)	1	,,
Xanthorhoe semifissata (Walk.) (Fam. Geometridae)	1	,,
Xanthorhoe rosearia (Dbld.) (Fam. Geometridae)	1	,,
Euchoeca rubropunctaria (Dbld.) (Fam. Geometridae)	1	,,
Elvia glaucata Walk. (Fam. Geometridae)	1	,,
Leptomeris rubraria (Dbld.) (Fam. Geometridae)	1	,,
Unidentified specimens	5	

2. COLLECTION MADE ON 12/6/52.

Opogona omoscopa (Meyr.) (Fam. Lyonetiadae)	203	specimens
Monopis ethelella (Newm.) (Fam. Tineidae)	2	,,
Tortrix postvittana Walk. (Fam. Tortricidae)	2	,,
Tortrix excessana (Walk.) (Fam. Tortricidae)	1	,,
Crambus flexuocellus Dbld. (Fam. Crambidae)	23	,,
Scoparia sp. (Fam. Pyraustidae)	8	,,
Selidosema dejectaria (Walk.) (Fam. Geometridae)	1	,,

Phrissogonus laticostatus (Walk.) (Fam. Geometridae)	1	,,
Melanchra stipata (Walk.) (Fam. Noctuidae)	1	,,
Dasypodia cymatodes Guen (Fam. Noctuidae)	1	,,
Plusia chalcites Esp. (Fam. Noctuidae)	1	,,
Unidentified specimens	7	

It is apparent that **O. Omoscopa** is one of the predominant species, at least at this time of the year.

Dr. W. J. Hall C.M.G. of the Commonwealth Institute of Entomology, London, has stated (in personal communication) that this species is a pest of banana fruits in sub-tropical countries. It is not considered to be a pest in New Zealand, however, but it may do some damage at times. For record purposes a list is given of the labels (with numbers of specimens) attached to moths which have been bred out and are in the collection of the Plant Diseases Division, Auckland.

Larva boring in strawberry crowns, Palmerston North, July 1934 (15).
Bred from strawberry stems, Palmerston North, 9/8/34 (1).
Bred from end of stored squash, Owairaka 1938. D. Spiller (1).
ex carrot cage, insectary, Owairaka, 25 Sept. 1942. T. R. Rabone (4).
ex cage containing pumpkin, Auckland, 11 Nov. 1942. W. Cottier (3).
Bred ex larva boring in crown of strawberry. Emerged July 1945. W. Cottier (8).
Boring in bulbs, Hastings. Emerged 29 July 1946. Orchard Instructor (1).
Bred ex peach stone in soil, Owairaka. Emerged 29 July 1946. M. W. Carter (1).
Bred ex strawberry corms, Avondale, Auckland, Sept. 1950. Department of Agriculture (2).
Bred ex strawberry plants, Avondale, Auckland, 19 Sept. 1950. Emerged Jan. 1951. Department of Agriculture (2).

ACKNOWLEDGMENT.

Identification of **Opogona omoscopa** Meyr. was confirmed by Dr. T. H. C. Taylor of the Commonwealth Institute of Entomology, London.

A SUPPLEMENTARY SOUND-PRODUCING DEVICE IN *Deinacrida rugosa* Buller (The Stephens Island Weta).

G. W. RAMSAY, Wellington.

The uunsual hissing sound and jerky abdominal contractions produced by the Stephen's Island Weta when annoyed first drew the writer's attention to this peculiar sound producing mechanism.

Wetas of the genera **Hemideina** and **Deinacrida** normally have a stridulating organ on the lateral regions of the second abdominal tergite, which when rubbed in the right direction by a corresponding organ on the hind femur produces a rasping or crackling sound. This is apparently present in both sexes. The organ usually consists of one or more raised ridges or an area of small spines which are rubbed by a group of short fine blunt spines or plates situated on the proximal region of the prolateral surface of the hind femur. The sound is produced by a vigorous kicking movement of the hind legs and varies in timbre or signal between different species. In addition **Deinacrida rugosa** has on lateral margin of abdominal tergite 2 an oval raised area of many fine spines. This type of organ is also reported to be present in the genera **Zealandosandrus** and **Hemiandrus** but as far as is known at present, it is very little used by these wetas.

Deinacrida rugosa has in addition a special sounding organ formed by the modification of the dorsal regions of abdominal tergites II, III, IV and V. The posterior margins of tergites II, III and IV are extended backwards and heavily thickened. This posterior projection has on its under surface or on the articular membrane attached to it, two dorso-lateral areas, slightly sunken and carrying many short small translucent brown spines. The anterior upper surfaces of tergites III, IV and V each have two very slightly raised areas of short, small, granule like spines, which lie directly behind and below the areas described above on abdominal tergites II, III and IV. This device is present on both sexes, although the female does not use it so frequently as does the male.

When disturbed these wetas in addition to the normal vigorous leg kicking movements, exhibit sudden telescopic contractions of the central region of the abdomen. This rubs together the two 'spine groups' thus producing a very audible hissing sound which is very effective and a great deterrant to handling these insects.

EXPLANATION OF PLATE.

Fig. 1.—Adult female **Deinacrida rugosa.** Dorsal View. S.O., sound organ.

Fig. 2.—Tergite removed to show intertergal membrane with sound-producing organ.

Fig. 3.—Tergite of abdominal segment 3 removed to show sound-producing organ on segment 4. Dorsal view. P = posterior margin.

Fig. 4.—Lateral margin of tergite 2 showing raised stridulating organ.

Fig. 5.—Prolateral surface of proximal region of left femur to show spined area of stridulating organ.
Scale line in Figs. 2, 3, 4 and 5 represent 1.0cm.

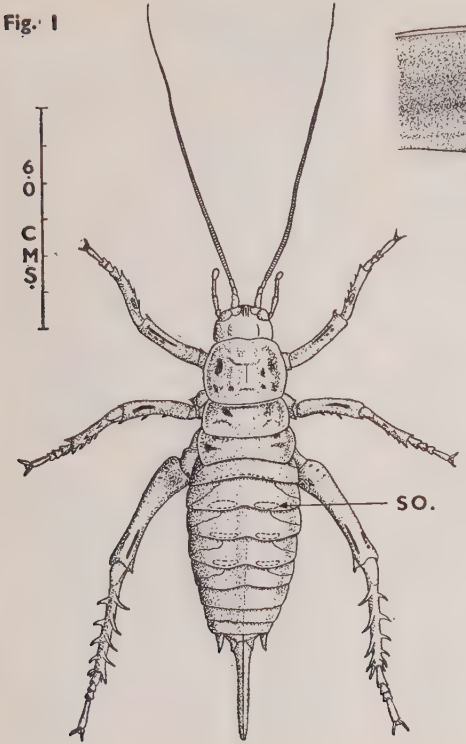


Fig. 1

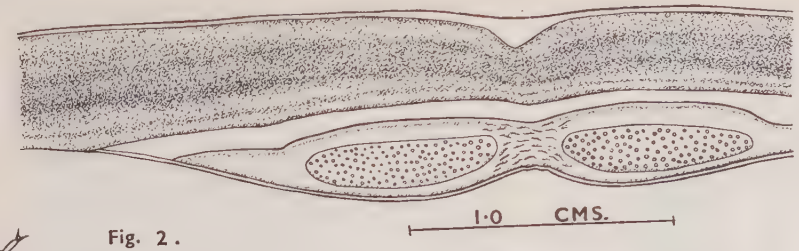


Fig. 2.

Fig. 3.

Fig. 4.

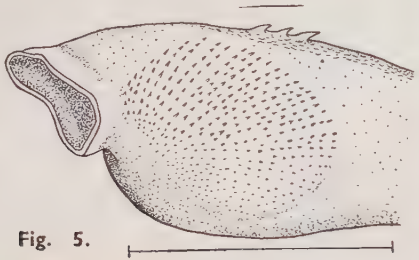


Fig. 5.

THE IDENTITY OF TWO COMMON SPECIES OF ICHNEUMON-WASPS.

ARTHUR W. PARROTT, Nelson.

In this short paper I am taking the opportunity to bring before the notice of local Entomologists, the correct nomenclature of two common species of Ichneumon-wasps occurring in New Zealand. The two species referred to belong to very diverse groups of the family, one being a cryptid the other an Ichneumonid. The cryptid has been referred to in local literature under several names, for instance **Mesostenus albopictus, M. nutatorius** and **M. novozelandicus** while the ichneumonid has been variously referred to as **Ichneumon promissorius, Excephanes leucaniae** and **Probolus albocinctus.**

There has been a certain laxity by economic entomologists in the past in referring to names of insects. A careful search of the literature by those who had occasion to refer to the insects considered in this paper, would have revealed the correct names to be used, in the case of the cryptid since 1937 and in the case of the ichneumonid since 1918.

There is no new synonymy brought forward in the present paper but the summary of the literature of these two species may be useful to local Entomologists. Adequate descriptions have been published so no detailed description here is necessary.

Xanthrocryptus albopictus (Smith)

Mesostenus ablopictus Smith, Trans. Ent. Soc. London for 1876, p. 477 (nec. Smith 1858).

Mesostenus nutatorius Fabr., Morley, Entomologist, vol. 42, p. 132, 1909.

Mesostenus novozelandicus Dalla Torre, Cat. Hymen. vol. 3, p. 545, 1909.

Xanthrocryptus ablopictus Cheesman, Nova Guinea, vol. 17 (Zool.), p. 382, 1936.

This species was described by Smith from Wellington, New Zealand in 1876. It is a common and widespread species throughout Australia and New Guinea, and probably occurs in many of the Islands in the Pacific.

Morley in 1909 suggested that **Cryptus nutatorius** Fabr. was co-specific with Smith's species, but Cheesman (in litt.) considers that Fabricius's species is a N.S.W. coastal form of the genus **Gotra.** Cheesman in 1937 compared specimens from Wellington New Zealand with New Guinea forms and co-types of Smiths **Mesostenus albopictus** and considered them to be co-specific and belonging to Cameron's genus **Xanthropimpla.**

There is little information as to the host relations of this species. Gourlay (1930:5)† lists four host species, two lepidoptera

† Gourlay 1930. D.S.I.R. Bull. 22, p. 5.

and two Cerambycid larvae. Gourlay's record of this species as an ectoparasite on the larvae of two Cerambycids, **Aemona hirta** Fabr. and **Xyloteles griseus** Westw. are probably correct. The two records recorded by Gourlay of this species attacking Lepidoptera larvae are probably based on the following statement by Miller (1919:203)* "The White marked **Mesostensus (M. albopictus)** (fig. 2) is often bred in large numbers from the army-worm **(Cirphis unipunctata)**". The accuracy of the observations on which this statement is based would appear to be rather doubtful and must be accepted with caution; as the group of the **Cryptini,** to which this species undoubtedly belongs, characterised by certain structural modifications of the ovipositor, are invariably parasitic on the wood-boring Coleoptera. I have seen material reared from several wood-boring coleoptera from Australia.

Ichneumon promissorius Erichson.

Ichneumon promissorius Erichson, Arch. f. Naturg. vol. 8, p. 254, 1842.

Excephanes leucaniae Tryon, Queensland Journ. Agric. vol. 6, p. 35, 1900.

Probolus albocincta Cameron, Entom. vol. 39, p. 181, 1906.

Probolus varilineatus Cameron, Proc. Linn. Soc. N.S.W. for 1912. p. 174, 1912.

Ichneumon (Euichneumon) promissorius Turner, Trans. Ent. Soc. London for 1918, p. 344. 1918.

Ichneumon albocinctus Heinrich, Ann. Mag. Nat. Hist., ser. 10, vol. 20, p. 259, 1937.

This common species varies considerably in colour and markings, and has consequently been named several times. Cameron described the male in 1906 as **Probolus albocinctus** and the female six years later as **Probolus varilineatus.** Tryon had previously described it from Queensland as **Excephanes leucaniae.** In 1918, based on material in the British Museum, Turner synonymised Cameron's **Probolus albocinctus** with a species described by Erichson in 1842 as **Ichneumon promissorius.**

The hosts of **I. promissorius** are usually Noctuid larvae and have been reared from a number of different species in Australia and must be considered a valuable agent in the natural control of army-worms and cut-worms.

* Miller 1919. N.Z. Journ. Agric. 19, 3, p. 203.

Melittobia clavicornis (Cameron) **(Hym. Eulophidae) PARASITE OF THE MASON WASP** *Pison spinolae* Shuckard **(Hym. Trypoxylonidae)**

R. A. CUMBER, Entomological Research Station, Foxton.

In June of 1948, a number of cocoons of the so-called "mason bee" were collected from their clay chambers on buildings at Kaiwaka near Wellsford. When these were studied some six months

later, it was found that a large number of hymenopterus parasites had merged in addition to adults of the host.

Material was forwarded to Dr. O. W. Richards of the Imperial College of Science and Technology, London, who kindly identified the insects as indicated in the title, adding that **M. clavicornis** is described from Borneo, and its presence in New Zealand probably indicates that the host has been spread by man.

This parasite does not appear to have been previously recorded from New Zealand.

CONTROL OF *Penthaleus major* Dugés IN OATS.

J. M. KELSEY, Entomological Research Station, Ashburton.

On 13/9/51 attention was drawn to damage in 120 acres of oats at Winchmore; the owner stated that visibly damaged areas had extended in 2 weeks from a small patch not more than 40 x 20ft. At the time of inspection the area concerned was some 3 acres in extent. Damage was caused by very heavy concentrations of the blue-oat-mite **Penthaleus Major** Dugés, the population being estimated as exceeding 500 per square foot.

Laboratory tests showed that both DDT and BHC controlled the mites, and that the latter gave best results. On 14/9/51, using a trailer-sprayer, approximately 1 acre of the most heavily infested area was sprayed with 250 gallons of water containing 1½lbs. of 100% gamma BHC, and leaving a square 30 x 30 paces untreated in the centre. No attempt was made to completely control the infestation since the oats was required for grazing only.

On 21/9/51 the area was inspected when it was found that no mites were present in the treated area, but that populations were unaltered inside and outside the treated zone.

On 18/11/51 the paddock was again inspected and no mites could be found on treated or untreated areas; the high temperatures and bright, sunny days had destroyed the mites.

A PRELIMINARY NOTE ON THE CONTROL OF *Cnemidocoptes mutans* Robin.

J. W. CLELAND, Entomological Research Station, Ashburton.

For the past fifty years control measures against poultry parasites such as **Cnemidocoptes mutans** have received little or no revision, in spite of the development of many new insecticides and acaricides. Standard recommendations have been dipping legs in crude petroleum, kerosene, and raw linseed oil in equal proportions; or a more laborious method of soaking legs of fowls in warm soapy water to loosen the scales and encrustations, and then applying an ointment consisting of one part sulphur and 9 parts of lard. Use of petroleum products is an extremely drastic form of control, sometimes making fowls lame for several days, and is not always

effective in severe infestations. The time involved in washing followed by the sulphur-lard ointment technique makes this approach unpractical on commercial poultry farms.

The following method is now being applied on a large commercial poultry farm in the Ashburton district, and is proving to be most successful. Applications of 0.5% by weight concentrations of lindane or DDT (based on para para isomer) were better than other materials tested; legs were clean and healthy six weeks after treatment. It was necessary to treat twice at 3-weekly intervals if a 0.1% concentration was used.

In all treatments, raw linseed oil was used as a carrier; this, alone, proved to be of no value as a controlling agent. By using solutions of lindane or DDT in raw linseed oil it is possible also to control **C. mutans** infestations of the neck, face and combs of fowls, a problem not possible with petroleum products which were far too severe on the skin, nor could scaly encrustations on the latter be removed by washing in warm soapy water.

If proper hygiene is used such as cleaning houses and rearing arks regularly, and deep digging of soil in poultry runs, there will be little trouble encountered with the above pest.

NOTES ON MELOLONTHINAE (Coleoptera). 1. (Including description of a new species.)

B. B. GIVEN, Entomological Research Station, Nelson.

Observations of flights of **Chlorochiton** species:—

Chlorochiton planiclypeus Given, **C. simmondsi** (Broun), and **C. discoidea** (Broun) all fly and feed during full daylight. **C. planiclypeus** was observed by Dr. Cumber to fly and settle on willows on the banks of the Manawatu River during late September 1952. **C. discoidea** and **C. simmondsi** apparently fly low, and feed on alpine meadow vegetation from late December to February.

Chlorochiton suturalis (Fabr.) appears during December and January, and flight extends from just before dusk, to approximately an hour after dusk. On one occasion during early January at Rotoiti, Nelson, a large flight was observed to be at maximum at about 9 p.m. During this flight it was noted that beetles were strongly attracted to light, a reaction not usual for the genus, and not on other occasions noted for this species.

Flights of **C. longicornis** Arrow were observed to follow a relatively constant pattern during January and early February 1953 at Paihia, Bay of Islands. During early January, the first beetles were observed to fly at about 8 p.m., maximum flight was at about 8.15 p.m., and flight ceased at 8.30 p.m. The period covering full flight was approximately from 8.10-8.20 p.m. By February 8th, flight commencement was about 7.25 p.m., with peak at approximately 7.50 p.m. The emergence area was under dense low cover of

exotic climbing and creeping vegetation, with moderate high cover of fig, plum, privet and tea-tree (**Leptospermum ericoides** A. Rich.). The area was situated approximately 200 yards back from the beach, between flat occupied sections and steep **Leptospermum**-covered slopes. The sex ratio of beetles appeared to be about 10:1 in favour of males, and little variation in this figure was evident throughout the period of observation. However, several specimens collected floating on the sea or washed up on beaches after flights were all females. Flights of this species were also observed in marginal areas of forest remnants near Keri Keri, Waiwera, and between Paihia and Opua. The beetles in all cases appeared to spend little time in low flight, rising to the tops of surrounding trees fairly rapidly. No actual feeding was observed, but beetles were taken from **Cyathea dealbata** Swartz (ponga), **Dacrydium cupressinum** Soland (Rimu), **Dysoxylum spectabile** Hook (Kohekohe), and the exotic fig and privet. Dissection of male beetles late in January showed little or no evidence of feeding.

A New Species of the Genus **Sericospilus** Sharp.

Sericospilus cumberi n. sp.

This is the smallest species of the genus yet described, and also the most northerly record of occurrence. Nearest allies of the species are **S. minor** Given, **S. brevis** Given, and **S. piliventris** (Broun).

Colour very similar to that of **S. minor, S. brevis** etc., but with infuscate mottling darker and more obvious. Dorsal and ventral ground colour testaceous; head red-brown on vertex, progressively lighter anteriorly, but with clypeal margin reddish; pronotum with narrow median, elongate lateral discal, and small lateral submarginal infuscations. Elytra with interstitial mottling but no iridescence. Claws, teeth and spines of limbs reddish brown, otherwise testaceous.

Head (fig. 1) with the clypeus deeply concave and evenly rounded anteriorly; frons, vertex and eyes not distinctive; **antenna** of male (fig. 9) with the longest lamella shorter than joints 1-4 together, and little if any longer than joints 2-4, joint 3 longer than 4; **pronotum** not markedly transverse, only slightly sinuate posteriorly, parallel-sided in posterior half and uniformly incurved to acute anterior angles; **elytra** with the interstices not strongly raised and not obviously alternately differentiated. **Foretibia tridentate** with the ultimate tooth strongly upturned and acute.

Genial claspers (Fig. 5) intermediate between those of **S. piliventris** (Fig. 6) and **S. minor** (Fig. 8).

Length: 6mm.
Breadth: 2.7mm.
Holotype male and paratype males in the collection of the Entomological Research Station, Nelson.

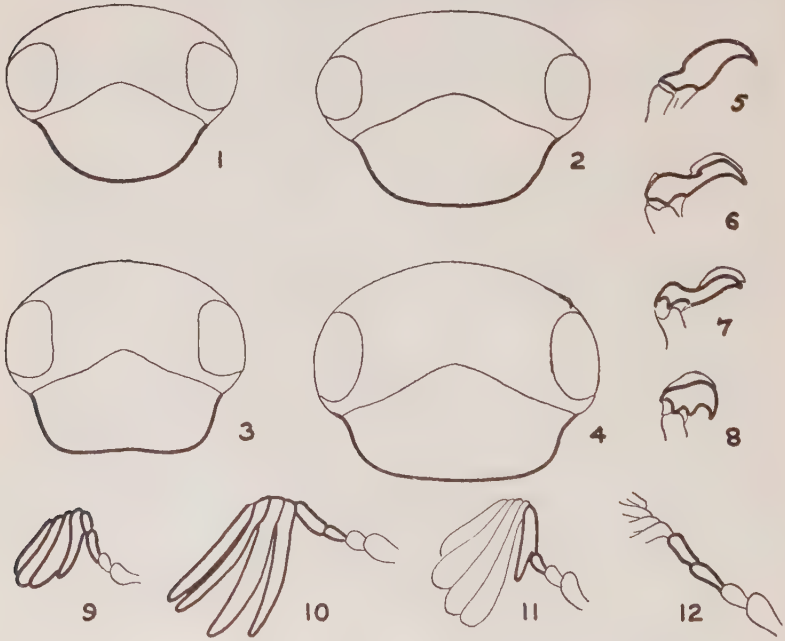
Remarks.—The type material was collected at Whangaroa, Northland, from **Pteris scaberula** A. Rich. fronds during mid-afternoon on 30/1/53.

Note.—This species may be fitted to the key in "A Revision of the Melolonthinae of New Zealand" (Given, 1952) p. 61, by the addition of the following as a third separation unit under No. 8—

"Fourth antennal segment shorter than third - - - - Whangaroa, North Auckland. - - - - - - **S. cumberi** n. sp."

FIGURES.

Fig. 1—**Sericospilus cumberi** n. sp., head.
„ 2— „ **minor** Given, head.
„ 3— „ **piliventris** (Broun), head.
„ 4— „ **brevis** Given, head.
„ 5— „ **cumberi** n. sp., male genital claspers.
„ 6— „ **piliventris** (Broun), male genital claspers.
„ 7— „ **brevis** Given, male genital claspers.
„ 8— „ **minor** Given, male genital claspers.
„ 9— „ **cumberi** n. sp., male antenna.
„ 10— „ **minor** Given, male antenna.
„ 11— „ **piliventris** (Broun), male antenna.
„ 12— „ **brevis** Given, male antenna.



RANDOM NOTES.

ERIC D. PRITCHARD, Auckland.

1. PSEUDOCALLIPRASON MARGINATUM (White).

Whereas **Navomorpha sticticum** was found with notable associates in the daytime, the insect **P. marginatum** was taken in that locality only at night, one specimen resting on a sheltered tree

trunk (**Coprosma spathulata**), one on flowers of the nikau, and one among flowering white rata (**Metrosideros hypericifolia**). One of these with an elytron singed, suggests the possibility of its being attracted to light, as forest fires were not evident in the region at the time.

2. RHITIDINOTUS SQUAMULOSUS Brown.

This colydiid occurs in considerable numbers under the bark attached underneath fairly old logs bridging the ground.

A series shows the variation in the dark brown colour pattern, though otherwise this well-adapted beetle seems to vary little except in size.

It has been taken at Waimamaku, Hokianga, in August 1938, and at Hinehopu, Rotorua, during the summer of 1950.

3. ZORION MINUTUM (Fab.).

In forest near Lake Rotoiti, Rotorua, large numbers of this small distinctive cerambycid were seen on two occasions scampering over the trunk of a small mangaeo tree (**Litsaea calicaris**) recently felled by the wind. The foliage was dry, but the loose bark was still moist enough to harbour the cucujid **Cryptomorpha** (**brevicornis** White?).

First seen in shadow at 4.10 p.m. on 6th January, 1950 in hot, sunny, clear weather, these active beetles were sought again at 11 a.m. on 12th January, 1950 without success; but at 5.10 p.m. when again the tree was shaded, many were seen to be abroad once more.

The weevil **Psephola barbifrons** White, also was taken from tunnels two inches beneath the bark of this tree.

4. GONOROPTERUS SPINICOLLIS Broun.

At both Waitakere Ranges, Auckland and Waipu Cove, North Auckland, this weevil has been found on small specimens of a tree believed to be **Olea lanceolata.** On only one tree among several growing nearby has **Gonoropterus spinicollis** been found, when the trees were flowering in February, 1947 at Auckland, and on a tree without flowers in North Auckland on 18th January, 1949.

Only two specimens of this weevil in my collection have been taken elsewhere, and then from the flower heads of **Gahnia** sp., in the same restricted area at Auckland.

5. LASIORRHYNCHUS BARBICORNIS (Fab.).

Weevil larvae were taken from long tunnels about 5mm. in diameter in the twisted close-grained wood of an unidentified dead tree in the Mangawai Gorge, North Auckland on 15th January, 1949. One of them, dislodged from a burrow, was carried away in soft, moist wood-pulp in a glass vial which became smeared inside.

Early in April the larva remained alive; and was not disturbed again until 15th May, when a male specimen of **Lasiorrhynchus barbicornis** had emerged in the vial. No exuvium was found. The weevil remained alive until 5th September, 1949.

Adult specimens of this weevil have been taken in a variety of places including nikau flowers in North Auckland, in January;

Schefflera digitata flowers at Auckland in February and March; under bark on logs of rimu (**Dacrydium cupressinum**) at Rotorua in January; in holes in **Carpodetus serratus** at Auckland in March, and among foliage of **Hedycarya arborea** at Auckland in February.

Generally, those taken from flowers in daytime have been females and those dislodged from places of concealment have been males.

TRANSPORTATION OF INSECTS BY AIRCRAFT.

ROY A. HARRISON, Plant Diseases Division, Auckland.

As an example of the ease with which live insects can be transported by aircraft and introduced alive into new countries in spite of the standard practices of aircraft fumigation and inspection, the following case is of interest.

A live silver-fish belonging to a species of the genus **Acrotelsa** Escherich (Thysanura; Lepismatidae) was captured when personal luggage was opened in Auckland on return by air from Samoa after a journey of two days. The insect was very active when captured. The genus **Acrotelsa** is widely spread throughout the Pacific but is not found naturally in New Zealand. During the air journey the aircraft was fumigated at least twice with insecticidal aerosols.

THE EFFECT OF SOME HYDROCARBON INSECTICIDES ON EARTHWORMS.

J. M. HOY, Entomological Research Station, Ashburton.

As a result of the development of certain hydrocarbon insecticides, particularly DDT, for the control of the common grass grub (**Costelytra zealandica** (White)) in pasture, an investigation of the effect of DDT, crude benzene hexachloride and gamma BHC on earthworms has been undertaken. In pot experiments using five or six replications of six earthworms per pot, the following equivalent field dosages of p.p.i. DDT have been used:—21lbs., 40lbs., 80lbs. per acre. Some mortality of earthworms occurs at the 80lbs. dosage, but dosages of 40lbs. per acre appear to have no effect on earthworms after eight weeks exposure. Similarly crude BHC was tested at equivalent field dosages of 2lbs., 10lbs., 12½lbs., 15lbs., 17½lbs., 20lbs., and 21lbs. per acre of the gamma isomer. No abnormal mortality, over controls, occurred at dosages up to 20lbs. in soil of reasonable organic content, but a dosage of 21lbs. killed all worms within eight weeks in soil of low organic content. Gamma isomer BHC was tested at equivalent field dosages of 2lbs., 10lbs., 15lbs., 20lbs., 30lbs., and 40lbs. per acre. No abnormal mortality occurred at any dosage after eight weeks, but the worms recovered from the 30lbs. and 40lbs. tests were not as vigorous as those in either the controls or the lower dosages.

The recommended field dosage of all three insecticides is two pounds of the active toxicant, which gives practical control of grass grub for three years. It would appear that little danger to earthworms is likely from the widespread usage of these insecticides. Further investigations are to be undertaken on the effect of varying levels of organic matter content on the toxicity of BHC. A full account of this work will be published elsewhere.

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